Full-wave half-square antenna

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Amateur Radio has published lots of information on antennas lately, but I would like to show another one which I have used a lot here, and in Darwin when we visited our two daughters. I have one now on 18 MHz.

If anyone has room for a dipole up to 25 feet, more or less on any frequency you want, then I can recommend the full-wave half-square to you now. It is quoted as giving 4 dB gain and radiates at right angles, the same as all dipoles.

As shown in Figure 1, the antenna comprises a vertical quarter-wave leg on one side of the feed-point, with a three-quarter-wave leg on the other. Of the latter, the first half-wave runs horizontally from the feed-point and the remaining quarter-wave hangs vertically down. A stabilising mass at the bottom of each vertical section keeps these wires taut.

The overall assembly is supported by a rope at each end, using suitable insulators. Each rope should run over a pulley at the support point so that it can be paid out or hauled back to adjust the antenna height, whilst at the same time keeping the half-wave section essentially horizontal. This is the method used to vary the feed-point impedance so that it matches that of the 50 ohm coax feeder.

The feed-point should ideally be installed near the shack so that the coax can be tied for at least six feet along the horizontal support rope, between the feed-point and the full-circle pulley rope at that end. The coax is also tied to the vertical rope so that it is kept well clear of the quarter-wave leg of the antenna which hangs down from the feed-point.

At the feed-point, a small slab of plastic (around 6 mm thick) can be used to mount a SO239 socket which connects the feeder to the antenna. The centre pin of the socket is connected to the long leg of the antenna and the metal body to the short leg. To do away with insulators, the two antenna legs and the support rope can be mechanically anchored to holes in this plastic piece.

For weatherproofing, wrap the plastic slab and socket assembly in black plastic sheet (from a garbage bag) and seal it up with black insulating tape.

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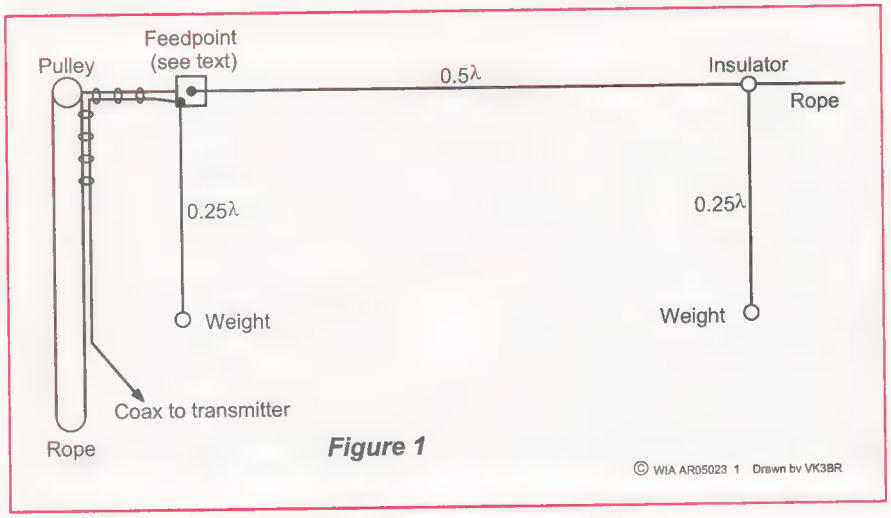
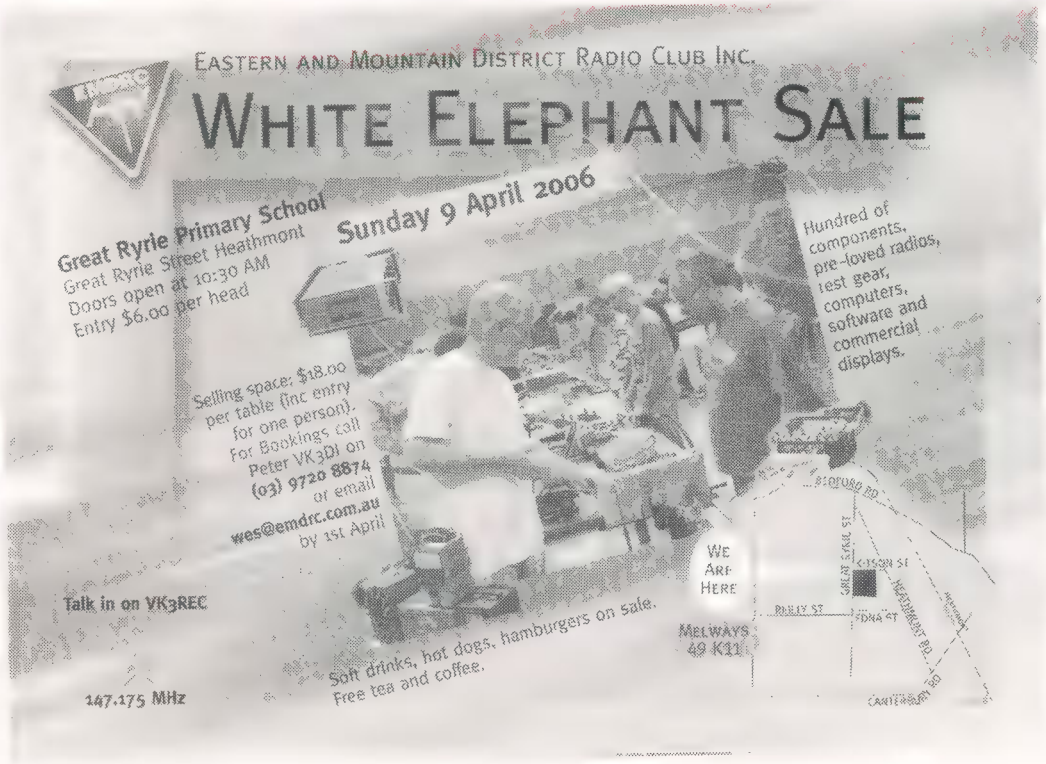


Figure 1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